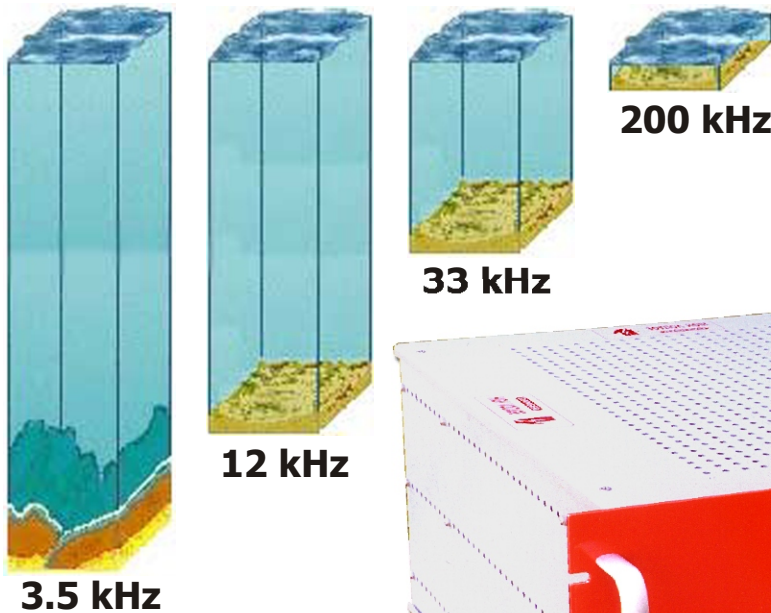
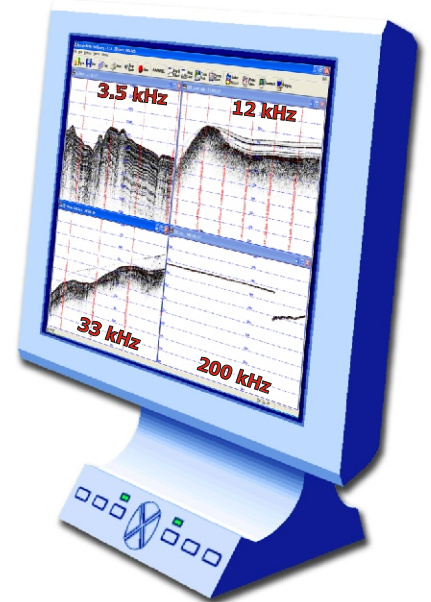


320BR *plus* ECHOSOUNDER

*One System For
Multi-Mission
Tasks!*



- Multiple Independent Channels (up to 4)
- Simultaneous Operation
- Sub Bottom Profiling
- CHIRP & Correlation processing
- Knudsen SounderSuite[®]
- Industry Standard Record Formats (SEG-Y, ASCII, XTF and .keb Binary Image File)



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ENGINEERING LIMITED

Technical Specifications *(subject to change without notice)*

Main Ranges: Metres, Feet or Fathoms

10
20
50
100
200
500
1,000
2,000
5,000

Phased Ranges: Multiple 50% overlapped phases of each range (20% overlap optional), manual or automatic selection.

Frequencies: Any 3 or 4 Frequencies between 3.5 kHz and 250 kHz
Standard frequencies include - 3.5, 12, 24, 28, 30, 33, 50, 200, and 210 kHz.

Power: 4 selectable levels for each frequency.
Frequency 1 - Up to 6 kW
Frequency 2, 3 & 4 - 2 kW each

Resolution: 1 cm (0-99.99), 1 dm (100-999.9), 1 m (>1000)
1/100 ft (0-99.99), 1/10 ft (100-999.9), 1 ft (>1000)
1/100 fm (0-99.99), 1/10 fm (100-999.9), 1 fm (>1000)

Sound Velocity: 1300 - 1700 m/s Resolution: 1 m/s
4265 - 5577 ft/s Resolution: 1 ft/s

Draft: 0 - 100 m Resolution: 1cm
0-328.08 ft Resolution: 0.01ft
0-54.68 fm Resolution: 0.01fm

Pulse Length: Automatically selected, with operator override.

Gain Controls: AGC, TVG plus manual receive gain for each frequency.

TX Blanking: 0 - 300 m. Resolution: 0.1 m
0 - 984.3 ft. Resolution: 0.1 ft
0 - 164.0 fm Resolution: 0.1 fm

Interfaces: Six RS-232 ports, 300-38,400 baud
50 Pin Centronix SCSI Connector
Optional RS-422

Heave: TSS and Seatex compatible.

Position: Compatible with all popular GPS receivers

Power Supply: Universal input, 95 to 240 VAC

Dimensions: Standard 5U 19" rackmount, 19" deep

Weight: Approximately 25 kg. depending on configuration. Shipping weight 43 kg.

Units: Metres, feet, fathoms

Knudsen SounderSuite Software:

Windows XP, Windows 2000, & Windows 98 SE compatible
Full function remote control of echosounder
Real-time Data Display
Simultaneous operation with other Survey Software such as HYPACK.
Post Processing Software

Output Data:

Full resolution envelope data, SEG-Y or KEL format.
User Configurable ASCII Digital Depth Strings

Serial Output Data:

NMEA compatible heave corrected depths for all frequencies.
Uncorrected depths, time, date, position (if available), and raw heave.
Loophrough from external devices (ASCII).

Options:

3 or 4 Frequency Combinations
Transducers (many are available)
Fully Configured Rackmount Computer and LCD Display

Field Programmable Software Upgrades

KEL 320 Echosounders are unique in their use of in-circuit-programmable flash program memory for storage of all firmware including signal processing algorithms and communications drivers. Echosounder firmware can be field upgraded with the latest revision provided via the internet or on a disk from KEL. This firmware can be downloaded into the echosounder using the survey computer. Users can thus benefit from the improvements and additions to the software which are continually being developed.

SCSI2 Interface

A standard feature of KEL echosounders is a SCSI 2 port. This interface is an effective high speed data link between small computers and peripheral devices. It provides the ability to transfer grey scale image data to the survey computer or data logger, plus such data as digitized depths, position, and heave. Raw data can be recorded on disk or magnetic tape and used in post processing for bottom or sub-bottom classification studies.

Knudsen SounderSuite Software

SounderSuite, a Windows application software package provided with the KEL 320BR Plus Echosounder uses the built-in SCSI port to provide a full-function user interface which provides real-time control of all operating parameters, plus real-time display of the greyscale printer data in a Window. This user interface also includes a flexible data logging facility which produces any combination of ASCII (digital depth data), Binary Image (greyscale printer data), SEG-Y or XTF files, simultaneously.

Connectability

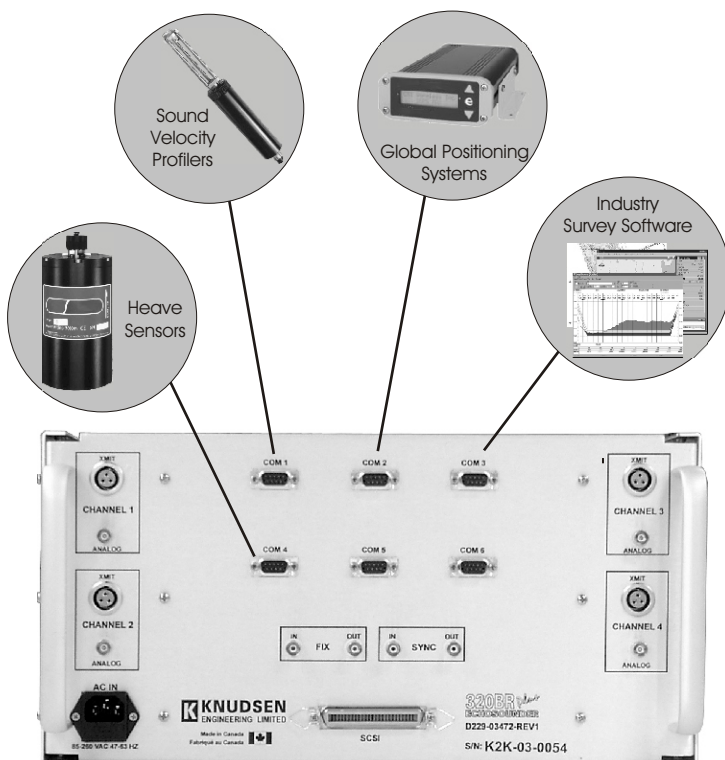
In addition to the SCSI 2 interface, the 320BR Plus has 6 RS-232 (or optional RS-422) serial ports available on the connector panel for general purpose interface. Drivers for most standard accessories (ie, GPS receivers, heave sensors etc.) are provided.

Digital Signal Processing (DSP)

The 320 echosounders do all signal processing digitally, using a separate DSP processor for each channel. There are many advantages to an all-digital system, including the inherently higher performance and greater stability of digital filters. The processing is performed in software which can be programmed to accommodate any frequency, bandwidth, or pulse length, eliminating the need for multiple analogue hardware filters.

Transducer interface

The 320BR Plus can be easily interfaced to customer-owned existing ship installed transducers, saving the expense of new transducers and dry dock installation costs.



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